What is claimed is:

1. A method for the hierarchical classification of unknown cell-specific proteins by listing known body organs, tissues, and locus-specific cell types, as manifesting cell-specific proteins.

2. A method of claim 1 where the said hierarchical classification is a basis for a number system, whereby said cell-specific proteins of any cell type are indirectly assigned a number.

3. A method for identifying constitutively expressed locus-specific proteins in the brain, the deactivation of which selectively impairs the otherwise normal behavioral response to a particular stimulus, comprising of:

first means for measuring the minimal change in said stimulus, of constant intensity and duration, and within the same sensory submodality, that elicits said behavioral response, whereby said behavioral responses to said stimuli correlate with subjective states;

second means for identifying brain loci, the deactivation of which selectively impairs said behavioral response to said stimuli, whereby said brain loci is correlated with said behavioral responses to said stimuli and whereby said brain loci is correlated with said subjective states;

third means for identifying said proteins specific to said brain loci, the deactivation of which selectively impairs said behavioral response to said stimuli, whereby said behavioral responses to said stimuli are selectively impaired, thereby whereby function of said proteins correlate with said behavioral responses and whereby function of said proteins correlate with said subjective states.

4. A method of Claim 3 for the selective amplification of mRNA transcription by using subjecting model mammalian animals to persistent specific stimulus of fixed duration and intensity.

5. A method of Claim 4 where the said model animals are in their postnatal critical stage.

V. A chronological note

In 1970, while a student at City University of New York, I outlined in a paper on the mind/brain problem why sensations are innate and determined by the local anatomic specificity of brain loci evoking them. About that time I formed Q1 Corporation, a company that developed the first 8-bit microcomputer system, which was delivered to Litton Industries in December 1972. The system utilized the 8008 microprocessor -- the first member of Intel's Pentium microprocessor family. A subsequent version of the system, based on the 8080, was then installed in the eleven bases of the National Aeronautics and Space Administration (NASA). In 1980 I resigned my position as president of Q1 and returned to the study of the mind/brain problem.

The basic problems that needed resolution were epistemological rather than technical. Until recently, most scientists shied away from the subject, while the contribution of philosophers to the field was negative. Consequently, addressing and resolving these issues turned out to be a virtually solitary undertaking. In 1995 an updated version of my 1970 paper was published by *Synthese.* In 1997 I discussed with Nadya Bobko, a biochemist at City University, the conceptual framework and how it provides a conceptual solution to the problem of muscle and bone loss in extended weightlessness. In 1998 I sent a letter to NASA suggesting that they pursue this proposed conceptual solution. That year I also sent, through Dr. James Watson, a draft of the identification method to Dr. Francis Crick, but was informed that he does not accept papers unless they were published in refereed journals. In 2000 I had a series meeting with Benjamin Bartelle, a biochemist at Cold Spring Harbor Laboratories. I presented to him the conceptual framework and the identification methods. He then accepted my suggestion to shift focus to the molecular neurobiology of elementary mental states, and begin by identifying the molecular correlates of the eight types of direction orientation columns visual area V5.

W. Appendix A. A review of five indirectly related basic issues

1. *General, non-specific consciousness and attention.* Elementary mental states, perception, and cognition, may be viewed as foreground events against general, non-specific background consciousness (Chalmers 2001). Background consciousness, like ambient light, has gradations from mania to depression, sleep, anesthesia, and coma. In addition, there are mechanisms that serially shift the focus attention, and heightened conscious activity, among brain loci. Background consciousness and attention are necessary for awareness of foreground events, which some call the specific *contents* of consciousness. In contrast, a foreground event, like tasting sweet or seeing red can be selectively inactivated. Background consciousness is innate, is evoked in the CNS, and has no more basic constituents. It therefore satisfies the criterion of an elementary mental state. Satisfying the conjunction of the conditions for background consciousness, attention, and foreground mental state constitute the sufficient condition for consciousness.

2. *Sensory awareness without activation of the anterior association cortex.* The conceptual framework implies that sensations are evoked in secondary sensory cortical areas. Some neuroscientists have assumed that the anterior association cortex must also be activated for these mental states to be experienced. Recent experiments, however, have demonstrated that this is not the case. During rapid eye movement (REM) dreams, for example, the limbic system and secondary sensory cortical areas are activated, but the anterior association cortex is not. Moreover, the primary sensory cortical areas also remain inactive (Braun et al. 1998).

3. *Ultimately, all observation is made from the first-person perspective.* Observations of a person may be partitioned into those that are consistent with observations of others, and those that are not. Both types of observations are private, and thus subjective. The intersubjectively consistent observations are called "objective," the other, "subjective." Thus, first-person perspective underlies, and has epistemological priority over, third-person perspective.

4. *The mind is not an emergent property of brain function.* Physicalism inverts the epistemological priority of the first- and third-person perspectives. This inversion leads to the conclusion that mental events are an emergent property of brain function. For example, some scientists, who recognize that color is evoked in the brain, have been led to conclude that it does not exist outside the brain (Martin 1991), and that the world was colorless for billions of years until brains evolved (Stapp 1993). The mind is not an emergent property of brain function, and it cannot be "reduced" to the physical. The identification of physical correlates of mental states is a preliminary stage towards formulation of the findings in terms of first-person perspective.

5. *Teleology and feedback mechanisms in the cell, body, and brain.*

5.1 Homeostatic maintenance of thermodynamic disequilibrium in the cell. Rosenblueth, Wiener, and Bieglow (1943) have shown that explaining biological and artificial systems in teleological, goal-oriented, or feedback mechanisms is consistent with physics. Teleological explanations are not only legitimate but also necessary. Life of a cell is often characterized in terms of it being far from thermodynamic equilibrium. But so is a rock on a mountaintop. However, only the cell, while it is alive, has negative and positive feedback mechanisms (stabilization and amplification respectively) to maintain, and within limits restore, this *disequilibrium.* Consider the membrane potential of a living cell. The inside is electrically negative relative to the outside. *The cell maintains this imbalance in a steady state* (called "the resting potential") by actively transporting ions against their gradients. After disruption of the membrane potential in the neuron, it is restored within about a millisecond.

5.2 Teleological mechanisms and brain function. Some teleological mechanisms, such as the immune system, are specific to multicellular organisms, underscoring the fact that health and disease are intrinsically normative. Teleological mechanisms are central to accounting for brain function. One of the set-points homeostatically maintained by the hypothalamus, for example, is the glucose level in the blood. This regulation is not conscious when automatic, but evokes hunger when voluntary action is needed. Similarly, thermoregulation in mammals is not conscious while temperature homeostasis can be maintained automatically, but the mental state of being cold is

evoked when a voluntary action is called for. The teleologic aspects of pleasure and pain, for example, are self-evident.

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